So the likely function is:

Log likely function of :

1. Answer:

According to the questions, we can conclude that it is a binomial distribution, so the log likely function should be like this:

According to the log likely function:

so

(1)->

(2)->

(3)->

so

In the log likely function, q is the only parameter.

1. Answer:

If ,

so

so

The expected of each component is:

u1=0.1 \* q1 + 0.4 \* q2 = 0.23

u2=0.2 \* q1 + 0.5 \* q2 = 0.33

u3=0.7 \* q1 + 0.1 \* q2 = 0.43